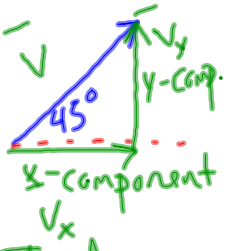
Vectors

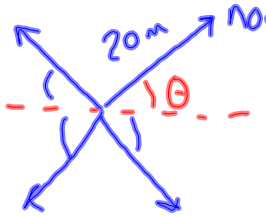
- Magnitude
- direction
- Examples:
  - force
  - Velocity
  - displacement
  - acceleration

Scalars

- magnitude
- Examples:
  - speed
  - time
  - mass
  - distance

- graphically denoted by an arrow $\vec{V}$





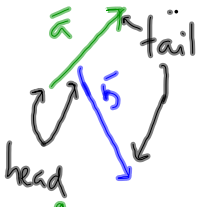
SOHCAHTOA

$$\sin\theta = \frac{opp.}{hyp.} = \frac{V_y}{V}$$

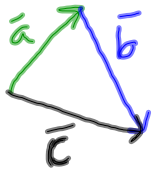
$$\cos\theta = \frac{adj.}{hyp.} = \frac{V_x}{V}$$

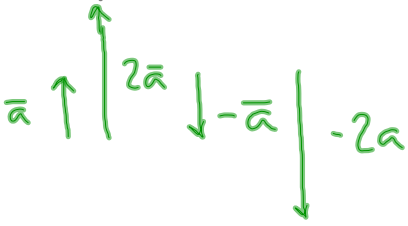
$$\tan\theta = \frac{opp.}{adj.} = \frac{V_y}{V_x}$$

- Ways to add vectors
  - Graphically

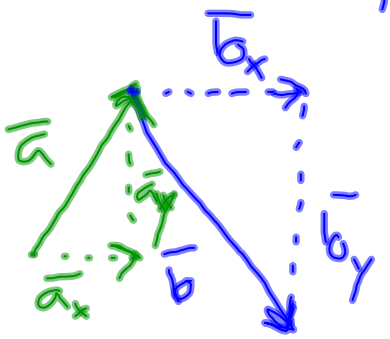


$\bar{a} + \bar{b} = \bar{c}$



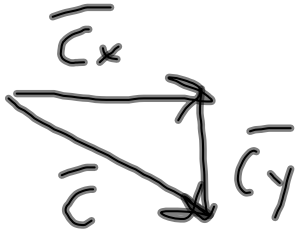


- Algebraically



$\bar{a} + \bar{b} = \bar{c}$

$\bar{a}_x + \bar{b}_x = \bar{c}_x$



$\bar{a}_y + \bar{b}_y = \bar{c}_y$

- Writing vectors

<x-component, y-comp.>

<3, 5>